



ATO-P R&D

Human Factors Research and Engineering Division

Human Factors Newsletter # 06-08

April 8, 2006 – April 21, 2006

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Technical Note: Truitt, T. (2006). *Electronic Flight Data in Airport Traffic Control Towers: Literature Review*(DOT/FAA/CT- 05/13). Atlantic City International Airport, NJ: Federal Aviation Administration, William J. Hughes Technical Center.

Abstract

The Federal Aviation Administration (FAA) is investigating the potential effects of implementing electronic flight data systems (EFDSs) at Airport Traffic Control Towers (ATCTs). This literature review examines task analyses, published literature, and recent field observation data to explore the basic functionality of flight progress strips (FPSs) in the ATCT. The author identifies gaps in the research and searches for general principles to guide the design of an EFDS prototype. Given the proper design of the interface and automation, an EFDS should maintain some of the basic functionality and benefits of the FPSs, reduce workload related to flight data entry, tracking and sharing, and provide new features that will enhance controller performance and encourage use. The author presents possible risks and outcomes that may accompany an EFDS in FAA ATCTs. Based in part on the information gathered in the literature review, an engineering research psychologist at the Research, Development, and Human Factors

Laboratory designed two prototype electronic flight data interfaces (EFDIs) for use in ATCTs. Researchers will conduct initial usability testing on the prototype EFDIs during April and May, 2006. Researchers will refine the EFDIs based on usability testing results and then employ the EFDIs to examine concepts of electronic flight data handling in ATCTs. The EFDIs also have the potential to support research in a virtual ATCT environment.

This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 5: Enhance the safety of FAA's air traffic systems.

Point of Contact: T. Truitt, WJHTC

Quarterly Reports: To access these reports, please point to:

- Aviation Maintenance - <http://www.hf.faa.gov/docs/508/docs/maintFY06Q2.pdf>
- Unmanned Aerial Systems - <http://www.hf.faa.gov/docs/508/docs/uavFY06Q2.pdf>
- General Aviation - <http://www.hf.faa.gov/docs/508/docs/gaFY06Q2.pdf>
- Vertical Flight - <http://www.hf.faa.gov/docs/508/docs/vfFY06Q2.pdf>

These research activities support the Administrator's Flight Plan Goal for Increased Safety, Objectives 1 and 2: Reduce the commercial fatal accident rate; Reduce the number of fatal accidents in general aviation.

Point of Contact: W. Krebs, ATO-P R&D

New Publication: FAA Flight Standards has released *The Operator's Manual for Human Factors in Aviation Maintenance* for distribution. Written in response to industry requests for "simplified instructions," the manual is a short and concise listing of six key factors on human factors in any maintenance organization. A team of industry, government, and academic human factors practitioners combined their wisdom and experience to briefly explain why each topic is critical, how to address the topic, and how to measure success. They also included key sources for additional information. Chapters include Event Investigation, Documentation, Training, Shift Turnover, and Fatigue/Alertness. The final chapter addresses the issue of program sustainment and cost justification. The manual is available in English, Chinese, and Spanish. For a copy, point to: (<http://www.hf.faa.gov/opsmanual>)

This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objectives 1 and 2: Reduce the commercial fatal accident rate; Reduce the number of fatal accidents in general aviation.

Point of Contact: W. Krebs, ATO-P R&D

Safety Conference: A Voluntary Aviation Safety Programs Conference was held April 18-20, 2006 in Denver, Colorado. Before the formal beginning of the conference, Frontier Airlines hosted a day-long workshop on the development of Crew Resource Management training. The FAA-sponsored conference included tutorials, presentations and selected workshops on the Advanced Qualification Program, Voluntary Disclosure Reporting Program, Internal Evaluation Program, Aviation Safety Action Program, Aviation Safety Reporting System, Line Operations Safety Audit, and the Flight Operational Quality Assurance Program. There were also discussions on the sharing of voluntary safety information from such programs between operators and with the FAA. The conference was international in scope, providing a forum for nearly 600 attendees to facilitate learning and information sharing with air carriers and repair stations that have, or plan to have, one or more of these voluntary aviation safety programs. Examples of agenda items included: (1) Presentation of human factors automation study results. This information will be used by airline training departments to develop more effective flight deck automation training; (2) Discussion of a human factors study of automation procedures with regional air line pilots. This study investigates the safety and efficiency advantages of proceduralizing automation tasks. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 1: Reduce the commercial fatal accident rate.* (E. Edens, ATO-P R&D)

Unmanned Aircraft Systems (UAS): Kevin Williams attended a meeting of the RTCA Special Committee 203 on UAS in Washington, DC, March 27-30, 2006. The committee is currently developing a guidance document that summarizes analyses performed on existing standards and regulations, identifies where gaps exist in standards, and provides recommendations for future committee work. Work on this document is nearly completed. New work will begin shortly on the development of two documents: (1) The first will cover detect, sense, and avoid; (2) The other document will deal with command, control, and communications. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 2: Reduce the number of fatal accidents in general aviation.* (K. Williams, CAMI)

More information on human factors research can be found at the FAA Human Factors (ATOP-R&D) web site: <http://www.hf.faa.gov>

Paul Krois
FAA (ATO-P R&D Human Factors)



April 22-27, 2006 – CHI 2006, Montreal, Quebec, Canada
<http://www.chi2006.org/call/hcioverviews.php>

April 23-28, 2006 - Avionics Systems Division Meeting, New Orleans, LA (TBD)
lemon@sae.org

April 24-25, 2006 – AIAA Inside Aerospace...An International Perspective, Renaissance, Washington, Wash, DC <http://www.aiaa.org/content.cfm?pageid=230&lumeetingid=1388>

April 24-25, 2006 – 3rd Annual Military Aviation Repair & Maintenance Symposium, Thistle Marble Arch, London, UK www.defenceiq.com/2649a

April 24-26, 2005 – ATCA/FAA/NASA Annual Technical Symposium, Atlantic City, NJ http://www.atca.org/activities/event_items.asp?month=4&year=2006&item_id=3557

April 25-27, 2006 – Maintenance, Repair & Overhaul (MRO) Conference & Exhibition, Phoenix Civic Plaza, Phoenix, AZ <http://www.aviationnow.com/conferences/mromain.htm>

May 1-4, 2006 - 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference; 14th AIAA/ASME/AHS Adaptive Structures Conference; 7th AIAA Gossamer Spacecraft Forum; 2nd AIAA Multidisciplinary Design Optimization Specialist Conference; 1st AIAA Non-Deterministic Approaches Conference, Hyatt Regency Newport, Newport, RI <http://www.aiaa.org/>

May 3-5, 2006 - 6th Annual European Business Aviation Convention & Exhibition (EBACE2006), Geneva, Switzerland <http://web.nbaa.org/public/cs/amc/>

May 6-7, 2006 - Alaska State Aviation Trade Show & Conference, Anchorage International Airport, AK aviation@gwu.edu

May 8-18, 2006 - Aviation Safety & Security Certificate Program, Dulles Airport, VA

May 9-11, 2006 – Flight Safety Foundation 51st Annual Corporate Aviation Safety Seminar, Phoenix, AZ <http://www.flightsafety.org/seminars.html#eass>

May 14-18, 2006 - 77th Annual Scientific Meeting of the Aerospace Medical Association, Caribe Royale Hotel, Orlando, FL <http://www.asma.org/>

May 15-16, 2006 – ASTM F38 Unmanned Aircraft Systems Committee Workshop, Sheraton Centre Toronto; Toronto, ON CAN <http://www.astm.org/>

May 15-18, 2006 – DoD TAG, Aladdin Hotel, Las Vegas, NV <http://hfetag.dtic.mil/meetschl.html>

May 16-21, 2006 – Berlin Air Show, Berlin, Germany http://www.ila-berlin.com/ila2006/konferenze...erenz2006_e.cfm?id_nr=31&tmp=1

May 17-19, 2006 – 17th International Conference on Heating and Ventilation, Prague, Czech Republic <http://www.acv2006.cz>

May 22-24, 2006 - 9th IFAC Symposium on Automated Systems Based on Human Skill And Knowledge, Nancy, France <http://www.cdc.gov/niosh/exhibits.html>

May 22-25, 2006 – RAA Annual Convention, Dallas, TX <http://www.raa.org/2006conference/>

May 23-25, 2006 – Defense Standardization Program Conference, Westin Arlington Gateway, Arlington, VA <http://www.sae.org/events/dsp/>

May 23-25, 2006 – 2006 International Air Cargo Conference, Brown Convention Center, Houston, TX <mailto:terryiacc@bellsouth.net>

May 25-28, 2006 – American Psychological Society 18th Annual Convention, New York Marriott Marquis, New York City, NY <http://www.psychologicalscience.org/convention/>

June 6-8, 2006 – IEE System Safety Conference, Savoy Place, London, UK <http://www.iee.org/events/event/CE202BA5-A0D3-8FE7-2F35A59A02C8B3F3>

June 8-10, 2006 – NTSB Bar Association Annual CLE Conference, NTSB Conference Center, L'Enfant Plaza, Wash, DC <http://www.ntsbbbar.org/>

June 11-14, 2006 – The American Society of Safety Engineers Safety 2006 Conference, Washington State Convention and Trade Center, Seattle, WA <http://www.asse.org/2006pdcallforpapers.pdf>

June 12-16, 2006 – UPA 2006 – 15th Annual Conference, Broomfield, CO http://www.usabilityprofessionals.org/conferences_and_events/upa_conference/2006/

June 24-26, 2006 – AAMI Conference & Exposition, Wash, DC <http://www.aami.org/proposals/index.html>

June 24-28, 2006 – ASHRAE Annual Conference, Quebec, Canada <http://www.ashrae.org/>

June 26-29, 2006 - [General Aviation Technology Conference](#) , Hyatt Hotel, Wichita, Kansas,

June 27-29, 2006 – 4th Annual Cognitive Systems Workshop, Santa Fe, New Mexico http://sandia.gov/cog.systems/cognitive_workshop/index.htm

June 27-29, 2006 – CGAR 2006 Conference, Embry-Riddle Aeronautical University, Prescott, AZ <http://www.cgar.org/default.asp>

July, 2006 - 26th International Congress of Applied Psychology, Athens, Greece dgeorgas@dp.uoa.gr , http://www.erasmus.gr/dynamic/conventions.asp?conv_id=21r/dynamic/conventions.asp?conv_id=21

July 5-9, 2006 - International Organization of Women Pilots 2006 Convention, Washington Marriott, Wash, DC <http://www.ninety-nines.org/>

July 10-14, 2006 – IEA 2006, 16th World Congress on Ergonomics, Maastricht, The Netherlands
<http://www.iea2006.org/>

July 17-23, 2006 – Farnborough International Air Show, London, UK
<http://www.farnborough.com/>

July 24-30, 2006 – EAA AirVenture, Oshkosh, WI <http://www.airventure.org/>

July 26-29, 2006 – CogSci 2006, Sheraton Vancouver Wall Centre, Vancouver, BC, Canada
<http://www.cogsci.rpi.edu/~rsun/cogsci2006/>

August 1, 2006 - The International Journal of Aviation Psychology, Special Issue on Air Traffic Control Human Factors, CALL FOR PAPERS. Please contact Jim Hitt at hitt_james@bah.com <mailto:hitt_james@bah.com> or Mike McAnulty at mike.mcanulty@faa.gov <<mailto:mike.mcanulty@faa.gov>> with any queries, or to submit papers.

August 10-13, 2006 – American Psychological Association Annual Meeting, New Orleans, LA
<http://www.apa.org/convention05/future.html>

August 21-24, 2006 - AIAA Modeling and Simulation Technologies Conference and Exhibit. Keystone Resort and Conference Center, Keystone, CO
<http://www.aiaa.org/content.cfm?pageid=1>

August 21-24, 2006 - AIAA Guidance, Navigation, and Control Conference and Exhibit, Keystone Resort and Conference Center, Keystone, CO
<http://www.aiaa.org/content.cfm?pageid=1>

August 29-31, 2006 – General Aviation Technology Conference & Exhibition, Wichita Hyatt, Wichita, KS <http://www.sae.org/events/gat/>

September 6-8, 2006 - 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Renaissance Portsmouth, Portsmouth, VA,
<http://www.aiaa.org/content.cfm?pageid=1>

September 6-7, 2006 - FAA-ATA 18th Annual International Symposium for Human Factors in Maintenance and Ramp Safety, Orlando, FL. www.airlines.org

September 8-13, 2006 – 75th NASAO Convention, New Orleans, LA www.nasao.org

September 10-14, 2006 - 54th International Congress of Aviation and Space Medicine, Bangalore, India. A preliminary registration form may be found at <http://www.isam-india.org/conference44/newreg.php>.

September 12-14, 2006 – 23rd International Air Cargo Forum and Exposition, Calgary, Ontario, Canada <http://www.tiaca.org>

September 19-21, 2006 – Space 2006, San Jose, CA www.aiaa.org

September 20-22, 2006 – HCI-Aero 2006, Seattle, WA <http://www.eurisco.org/hci-aero2006>

Note: Submission Deadlines:

15th March 2006 - Full Research Papers

15 April 2006 - Industry Papers

15 April 2006 - Early Stage Research Papers

15 April 2006 - Panels, Workshops

15 April 2006 - Posters and Demos

September 26-27, 2006 – AIAA Aviation Technology, Integration and Operations Conference, Hyatt Regency, Wichita, KS <http://www.aiaa.org/content.cfm?pageid=1>

October 8-11, 2006 - IEEE International Conference on Systems, Man, and Cybernetics, The Grand Hotel, Taipei, Taiwan <http://ins.cn.nctu.edu.tw/smc2006/>
March 1, 2006: Deadline for submission of papers (full papers only)

October 15-19, 2006 – Digital Avionics Systems Conference, 25th DASC Network Centric Environment: The Impact on Avionics and Systems, Hilton Portland and Executive Tower, Portland, OR www.dasconline.org
February 19, 2006 – Deadline for submitting abstracts of 1000 words

October 15-20, 2006 – 2nd Annual Augmented Cognition International Conference, Hilton San Francisco, San Francisco, CA www.augmentedcognition.org

October 16-20, 2006 – Human Factors and Ergonomics Society Annual Meeting, San Francisco Hilton, San Francisco, CA <http://www.hfes.org/web/HFESMeetings/meetings.html>

Key Dates:

March 1, 2006 - Proposals (all presentation types)

April 18, 2006 - Accept/reject letters sent

May 8, 2006 - Workshop preliminary handouts due

May 16, 2006 - Proceedings paper prep instructions available

May 22, 2006 - Workshop final acceptances sent

June 5, 2006 - Online preliminary program available

June 26, 2006 - Proceedings papers due

September 8, 2006 - Early registration deadline

October 17-19, 2006 – NBAA 59th Annual Meeting and Convention, Orlando, FL
<http://web.nbaa.org/public/cs/amc/futuresites.php>

October 23-25, 2006 – 44th Annual SAFE Symposium, Reno Hilton Hotel, Reno, NV
<http://www.safeassociation.org/symposium.htm>

October 23-26, 2006 - DoD Maintenance Symposium & Exhibition, Reno Hilton, Reno, Nevada
<http://www.sae.org/events/conferences/aerospace/>

October 29 - November 1, 2006 – ATCA Convention and Exposition, Marriott Wardman Park, Wash, DC

November 9-11, 2006 – AOPA Expo 2006, Palm Springs, CA
<http://www.aopa.org/expo/2005/virtual/>

November 13-14, 2006 ASTM F38 Unmanned Aircraft Systems Committee Workshop, Hyatt Regency, Atlanta, GA <http://www.astm.org/>

November 14-16, 2006 – *Aerospace Testing Expo, Anaheim, CA* www.aerospacetesting-expo.com

January 8-11, 2007 - 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV <http://www.aiaa.org/content.cfm?pageid=1>

January 27-31, 2007 - ASHRAE Winter Meeting, Dallas, TX jyoung@ashrae.org, or www.ashrae.org.

February 13-15, 2007 – US Air Force T&E Days, Hilton San Destin Beach, Destin, FL
<http://www.aiaa.org/content.cfm?pageid=230&lumetingid=1474&viewcon=submit>

March 3-10, 2007 – IEEE Aerospace Conference, Big Sky, Montana
<http://www.aiaa.org/content.cfm?pageid=1&show=All>

March 7-8, 2007 – Avionics 07 Expo XXI, Amsterdam http://www.avionics-event.com/avionics06/why_exhibit.html

April 17-23, 2007 – Sun ‘n Fun, Lakeland, FL <http://www.sun-n-fun.org/content/>

May 21-22, 2007 - ASTM F38 Unmanned Aircraft Systems Committee Workshop, Waterside Convention Center, Norfolk, VA <http://www.astm.org/>

June 23-27, 2007 – ASHRAE Annual Meeting, Long Beach, CA jyoung@ashrae.org, www.ashrae.org

July 22-27, 2007 – 12th HCI International, Beijing, China <http://www.hcii2007.org/>

September 25-27, 2007 - NBAA 60th Annual Meeting and Convention, Atlanta, GA
<http://web.nbaa.org/public/cs/amc/futuresites.php>

October 1-5, 2007 – Human Factors and Ergonomics Society Annual Meeting, Baltimore Waterfront Marriott Hotel, Baltimore, MD
<http://www.hfes.org/web/HFESMeetings/meetings.html>

November 13-16, 2007 – DoD Maintenance Symposium and Exhibition, Rosen Shingle Creek, Orlando, FL <http://www.sae.org/events/conferences/aerospace/>

Note: Calendar events in Italics are new since the last Newsletter



Comments or questions regarding this newsletter?
Please contact Bill Berger at (334) 271-2928
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